ZEYLANIDIUM OLIVACEUM (GARDN.) ENGL. (PODOSTEMACEAE)—FIRST REPORT OF ITS PRESENCE IN KAMENG DISTRICT, ARUNACHAL PRADESH

Podostemaceae include peculiar flowering plants, comparatively rare and rather poorly known. Hence, the discovery of *Zeylanidium*, a member of this family in two rivers of Kameng district, Arunachal Pradesh, is of interest. A critical study of the collection proved them to be *Zeylanidium olivaceum* (Gardn.) Engl. a variable species, so far know from the Deccan Peninsula. Our first collection (*A. S. Rao* 49454—Plate 1) was made in the Dirang river, along its left bank, in the north vicinity of an ancient, primitive cantilever log foot-bridge spanning the river and connecting the foot track from Dirang Dzong. The second collection (A. S. Rao 50601) was made along the right bank of Bichom river, near the newly constructed Timber Vehicular bridge at 72 km point on the road to Sepla. In view of the comparative rarity and recorded variability, a description with illustrations, drawn on a detailed study of populations is furnished.

Zeylanidium olivaceum (Gardn.) Engl. in E. & P. Pflanzenfam. 18a: 8. f. 5. 62. f. 55. 1930; Subramanyam, Aquatic Angiosperms 49. f. 33. 1962. *Podostemon olivaceum* Gardn. in Calc. Jour. nat. Hist. 7: 181, 1846. Hooker f. Fl. Brit. India 5: 66, 1866. *Hydrobryum olivaceum* Tul. in Ann.

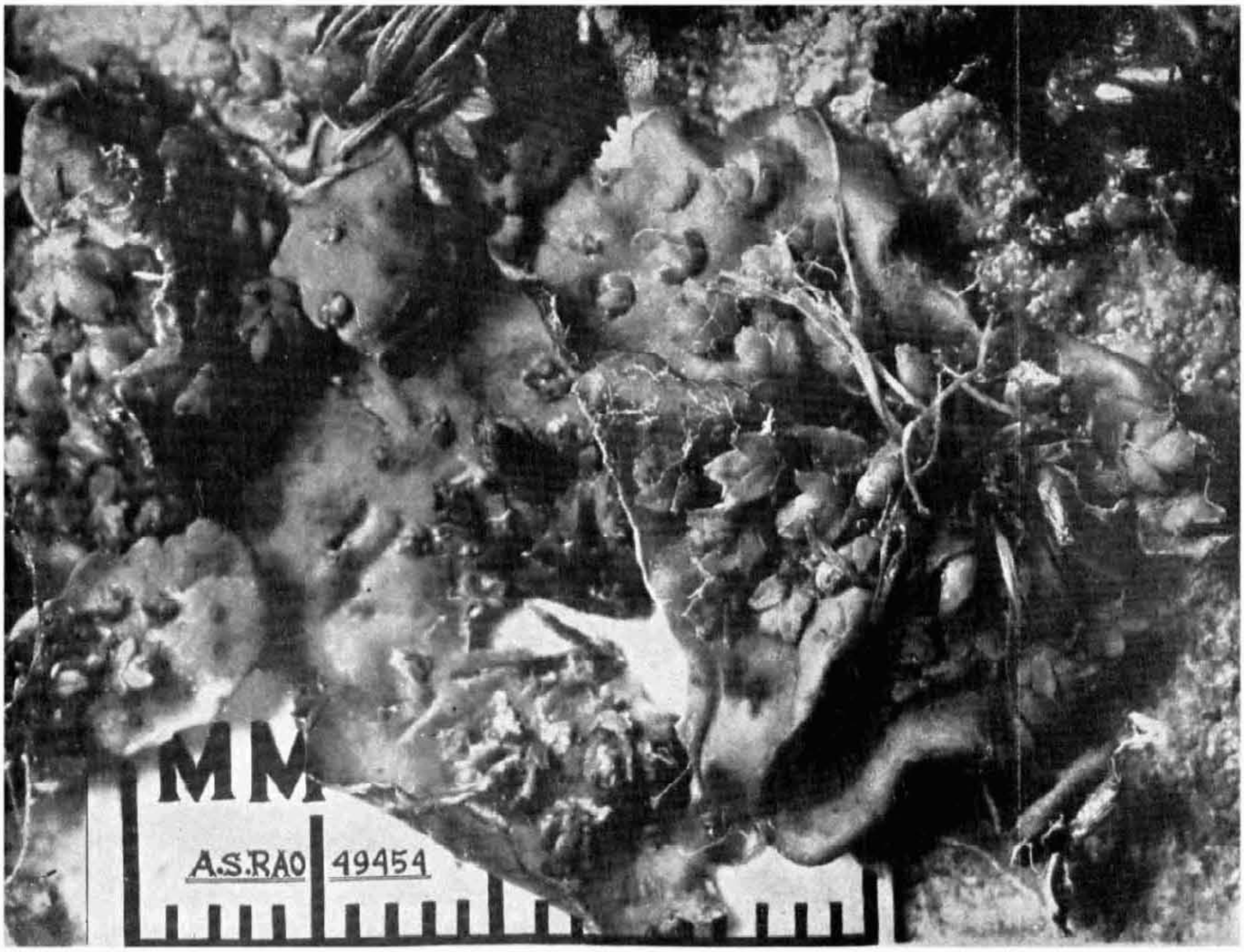
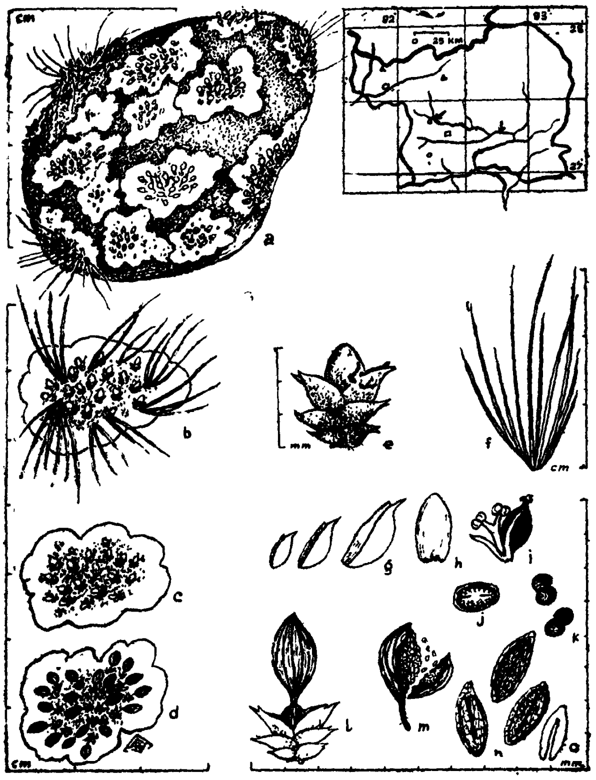


Plate 1 : *Zeylanidium olivaceum* (Gardn.) Engl. Thalli with vegetative shoots, flowering and fruiting shoots.

Sc. Nat. Ser. 3, 11: 104, 1849; Wight, Icones 5(2): 34, t. 1918 f. 2. 1852; Willis in Ann. Roy. bot. Gdn. Peradeniya 1(3): 239, 1902.

Lichenoid or hepaticoid thallose herbs plastering embedded large pebbles and boulders, in river eddies and rapids. *Thallus* thin, green, irregularly shallowly lobed, 1-3 × 1-4 cm with numrous tiny flowering shoots and vegetative shoots of long leaves. *Vegetative shoots* associated at the base of flowering shoots or scattered or often wanting, particularly in fruiting thalli. *Leaves* subulate, clustered, 2-16 (or many), 1-3.5 cm long, base often slightly broad, scooped. *Flowering shoots* tiny, 4-5 mm usually crowded at center of thallus, each with 2-3 pairs of progressively large (from base to top of shoot) imbricate bracts, and a terminal spathe-ensheathed flower. *Bracts* 0.5-1.5 mm long, deeply scooped, slightly keeled; apex acute with a sub-terminal bent beak-like acumen. *Spathe* thin, oblong ovoid to ellipsoid, 1.5-2 mm high, 1 mm across, tearing longitudinally from top and remaining as a loose shrivelled up collar at base, even in fruit. *Flower* bisexual, 2.5-5 mm. *Tepals* 2 linear, white, on either side of and adnate at base to the filament. Stamens 2, (rarely 3) monadelphous, about as long as the ovary; anthers 2-celled, dehiscing by longitudinal furrows; pollen in dyads. *Ovary* 2- 4 mm, ovoid to ellipsoid, short-stalked, smooth, dark brown, bilocular; ovules innumerable; placenta fleshy, axile. *Stigma* obscurely 2-4-lobed, subsessile. *Fruit* a capsule, 3-5 mm obliquely ellipsoid, 8-12-ribbed, brownish, dehiscing unequally into a smaller free half and a larger persisting half, on the stalk. Stalk 1-2 mm slender, with a basal collar of shrivelled spathe-remnant. *Seeds* small, numerous, ovoid to ellipsoid, dark brown, exendospermous; embryo dicotyledonous, fully filling the thin reticulate testa (Figs. *a-o*).



Zeylanidium olivaceum (Gardn.) Engl.

Figs. *a-o*: (*a*) Habit. (*b*) Thallus with flowering and vegetative shoots. (*c*) Thallus with flowering shoots only. (*d*) Thallus with fruiting shoots only. (*e*) Flowering shoot. (*f*) Vegetative shoot. (*g*) Bottom, middle and top bracts. (*h*) Spathe. (*i*) Flower with two stamens on a common stalk, with two linear tepals on either side, and short-stalked ovary. (*j*) T. S. ovary. (k) Pollen dyads. (l) Fruiting shoot. (*m*) Dehisched capsule spilling seeds. (*n*) Seeds. (*o*) Embryo. (Note: Pollen dyads, seeds and embryo not to scale, but highly enlarged). Arrows in map indicate collection localities. (*A. S. Rao* 49454).

Flowering and fruiting: Oct.-Nov.

Dirang river, Kameng district, Arunachal Pradesh —*A. S. Rao* 49454 (ASSAM); Bichom river, Kameng district, Arunachal Pradesh—*A. S. Rao* 50601 (ASSAM).

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